

REMARKS

Claims 77-109 are pending.

New independent claims 77 and 95 recite:

- “a charging coil for inductively charging the rechargeable battery within the implantable medical device when the rechargeable battery is not depleted to zero volts;
- a booster coil, wherein the booster coil is configured to operate temporarily to recover the implantable medical device when the rechargeable battery is depleted to zero volts.”

These claims are supported and clear under 35 U.S.C. § 112, as the following paragraphs in Applicant's specification will attest:

Referring to FIG. 2 (2-1; 2-2), in operation, the chair pad may be used to charge the rechargeable battery in the implanted stimulator. *For normal microstimulator battery charging, i.e., where the rechargeable microstimulator battery has not been depleted down to zero volts, the base station 50 may power the charging coil 34 inside the chair pad 32, which generates a magnetic field and thereby inductively recharges the battery in the microstimulator.*

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An important function of the charging/communication system is the ability to recover the microstimulator when the rechargeable battery is completely dead. During such zero-volt recovery (ZVR), the microstimulator is defaulted to a depletion mode. A *short duration*, high amplitude magnetic field at a frequency of approximately 1.2 MHz is delivered to the microstimulator in order to set the microstimulator charging circuitry into a regular charging mode. The chair pad contains a booster coil 419 which is used to generate the short duration (less than 1 sec) magnetic field in the 1.2 MHz range.

In the event, however, that the microstimulator battery voltage should drop to a complete depletion level or "zero volt" mode, the microstimulator circuitry that controls the charging frequency will default to a state that causes the resonant frequency of the microstimulator circuitry and receiver coil to shift to about 1.2 MHz which is the Zero Volt Recovery (ZVR) frequency. Before normal charging of the microstimulator battery can begin, the base station temporarily operates in ZVR mode. In this ZVR mode, the booster coil is driven at the ZVR frequency (1.2 MHz), which resets the battery charging circuitry in the microstimulator to

127 KHz, by activating the front-end switches of the microstimulator setting the microstimulator to a trickle charge mode.

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Driving the booster coil at 2.9 Amperes (rms) can produce a magnetic flux of 175 mGauss (rms) at a point 15 cm vertically from the center plane of the booster coil, 5 cm radially away from the booster coil axis (the maximum ZVR distance) with up to 300 of axis misalignment relative to the microstimulator. This satisfies the ZVR distance between the chair pad and microstimulator. *The chairpad can operate in this mode for more than 1 second.*

Applicant's Specification, ¶¶ [0062], [0066], [0067], [0069].

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Based on the above remarks, Applicant respectfully submits that pending claims 77-109 are allowable, and requests that a Notice of Allowance issue for these claims.

Respectfully submitted,

/ Terril Lewis/

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